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## SEQUENCE LISTING

&lt;110&gt; Johnson, Gary L.

<120> MEKK1 PROTEINS AND FRAGMENTS THEREOF FOR USE IN REGULATING  
APOPTOSIS

&lt;130&gt; CPI-042CPPC

&lt;140&gt; PCT/US99/02974

&lt;141&gt; February 12, 1999

&lt;160&gt; 21

&lt;170&gt; PatentIn Ver. 2.0

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&lt;211&gt; 3260

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;221&gt; CDS

&lt;222&gt; (486)..(2501)

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Glu Ser Leu Phe Gln Lys Tyr His Ser Arg Arg Ser Ser Arg Ile Lys	
385 390 395	



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Ala Pro Ser Arg Asn Thr Ile Gln Lys Phe Val Ser Arg Met Ser Asn	
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tct cac aca ctg tca tcg tct agc aca tcc aca tct agt tca gaa aac	1298
Ser His Thr Leu Ser Ser Ser Ser Thr Ser Thr Ser Ser Ser Glu Asn	
415 420 425	
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Ser Ile Lys Asp Glu Glu Glu Gln Met Cys Pro Ile Cys Leu Leu Gly	
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Met Leu Asp Glu Glu Ser Leu Thr Val Cys Glu Asp Gly Cys Arg Asn	
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Lys Leu His His His Cys Met Ser Ile Trp Ala Glu Glu Cys Arg Arg	
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Asn Arg Glu Pro Leu Ile Cys Pro Leu Cys Arg Ser Lys Trp Arg Ser	
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His Asp Phe Tyr Ser His Glu Leu Ser Ser Pro Val Glu Ser Pro Ala	
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Ser Leu Arg Ala Val Gln Gln Pro Ser Ser Pro Gln Gln Pro Val Ala	
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Gly Ser Gln Arg Arg Asn Gln Glu Ser Ser Phe Asn Leu Thr His Phe	
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gga acc cag cag att cct tcc gct tac aaa gat ttg gcc gag cca tgg	1682
Gly Thr Gln Gln Ile Pro Ser Ala Tyr Lys Asp Leu Ala Glu Pro Trp	
545 550 555	
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Ile Gln Val Phe Gly Met Glu Leu Val Gly Cys Leu Phe Ser Arg Asn	
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tgg aac gta agg gaa atg gcc ctt agg cgt ctt tcc cac gac gtt agt	1778
Trp Asn Val Arg Glu Met Ala Leu Arg Arg Leu Ser His Asp Val Ser	
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ggg gcc ctg ttg ttg gca aac ggg gag agc act gga aac tct gga ggc	1826
Gly Ala Leu Leu Leu Ala Asn Gly Glu Ser Thr Gly Asn Ser Gly Gly	
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Gly Ser Gly Gly Ser Leu Ser Ala Gly Ala Ala Ser Gly Ser Ser Gln	
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ccc agc atc tca ggg gat gtg gtg gag gcg tgc tgc agt gtc ctg tct	1922
Pro Ser Ile Ser Gly Asp Val Val Glu Ala Cys Cys Ser Val Leu Ser	
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Ile Val Cys Ala Asp Pro Val Tyr Lys Val Tyr Val Ala Ala Leu Lys	
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Val Lys Cys Ala Asp Ala Asn Ser Arg Thr Ser Gln Leu Ser Ile Ser	
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Pro Ala Glu Phe Tyr Pro His Ile Val Ser Thr Asp Val Ser Gln Ala	
765 770 775 780	
gag cct gtt gaa atc agg tac aag aag ctg ctc tcc ctc tta acc ttt	2402
Glu Pro Val Glu Ile Arg Tyr Lys Lys Leu Leu Ser Leu Leu Thr Phe	
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cgg agg ata tat ctg agc tct gcc agg atg gtg acc gca gtg ccc gct	2498
Arg Arg Ile Tyr Leu Ser Ser Ala Arg Met Val Thr Ala Val Pro Ala	
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Val Phe Ser Lys Leu Val Thr Met Leu Asn Ala Ser Gly Ser Thr His	
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ttc acc agg atg cgc cgg cgt ctg atg gct atc gcg gat gag gta gaa	2594
Phe Thr Arg Met Arg Arg Arg Leu Met Ala Ile Ala Asp Glu Val Glu	
845 850 855 860	
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Ile Ala Glu Val Ile Gln Leu Gly Val Glu Asp Thr Val Asp Gly His	
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Gln Asp Ser Leu Gln Ala Val Ala Pro Thr Ser Cys Leu Glu Asn Ser	
880 885 890	
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Ser Leu Glu His Thr Val His Arg Glu Lys Thr Gly Lys Gly Leu Ser	
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Ala Thr Arg Leu Ser Ala Ser Ser Glu Asp Ile Ser Asp Arg Leu Ala	
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Cys Ser Ser Ala Pro Ser Val Pro Asp Ile Ser Lys His Arg Pro Gln	
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Asn Ile His Arg Pro Lys Pro Ser Arg Pro Val Pro Gly Ser Thr Ser	
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Lys Leu Gly Asp Ala Thr Lys Ser Ser Met Thr Leu Asp Leu Gly Ser	
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Cys Arg Leu Asp Val Asn Thr Glu Leu Asn Ser Ser Ile Glu Asp Leu	
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aat cat ctc gcc ttg ata ttt aag att gct agc gca act act gca ccg Asn His Leu Ala Leu Ile Phe Lys Ile Ala Ser Ala Thr Thr Ala Pro 1440 1445 1450	4370
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cttctaccaa agttcactct cagaatgaaa ttctacgtgc tgtgtgacta tgactcctaa	5176
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5253

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Ala Leu Gln Gly Ser Gly Ala Pro Ala Ala Gly Ala Ala Gly Leu Leu  
35 40 45

Arg Glu Pro Gly Ser Ala Gly Arg Glu Arg Ala Asp Trp Arg Arg Arg  
50 55 60

His Val Arg Lys Val Arg Ser Val Glu Leu Asp Gln Leu Pro Glu Gln  
65 70 75 80

Pro Leu Phe Leu Ala Ala Ala Ser Pro Pro Cys Pro Ser Thr Ser Pro  
85 90 95

Ser Pro Glu Pro Ala Asp Ala Ala Ala Gly Ala Ser Arg Phe Gln Pro  
100 105 110

Ala Ala Gly Pro Pro Pro Pro Gly Ala Ala Ser Arg Cys Gly Ser His  
115 120 125

Ser Ala Glu Leu Ala Ala Ala Arg Asp Ser Gly Ala Arg Ser Pro Ala  
130 135 140

Gly Ala Glu Pro Pro Ser Ala Ala Ala Pro Ser Gly Arg Glu Met Glu  
145 150 155 160

Asn Lys Glu Thr Leu Lys Gly Leu His Lys Met Glu Asp Arg Pro Glu  
165 170 175

Glu Arg Met Ile Arg Glu Lys Leu Lys Ala Thr Cys Met Pro Ala Trp  
180 185 190

Lys His Glu Trp Leu Glu Arg Arg Asn Arg Arg Gly Pro Val Val Val  
195 200 205

Lys Pro Ile Pro Ile Lys Gly Asp Gly Ser Glu Val Asn Asn Leu Ala  
210 215 220

Ala Glu Pro Gln Gly Glu Gly Gln Ala Gly Ser Ala Ala Pro Ala Pro  
225 230 235 240

Lys Gly Arg Arg Ser Pro Ser Pro Gly Ser Ser Pro Ser Gly Arg Ser  
245 250 255

Val Lys Pro Glu Ser Pro Gly Val Arg Arg Lys Arg Val Ser Pro Val  
260 265 270

Pro	Phe	Gln	Ser	Gly	Arg	Ile	Thr	Pro	Pro	Arg	Arg	Ala	Pro	Ser	Pro	275	280	285
Asp	Gly	Phe	Ser	Pro	Tyr	Ser	Pro	Glu	Glu	Thr	Ser	Arg	Arg	Val	Asn	290	295	300
Lys	Val	Met	Arg	Ala	Arg	Leu	Tyr	Leu	Leu	Gln	Gln	Ile	Gly	Pro	Asn	305	310	315
Ser	Phe	Leu	Ile	Gly	Gly	Asp	Ser	Pro	Asp	Asn	Lys	Tyr	Arg	Val	Phe	325	330	335
Ile	Gly	Pro	Gln	Asn	Cys	Ser	Cys	Gly	Arg	Gly	Ala	Phe	Cys	Ile	His	340	345	350
Leu	Leu	Phe	Val	Met	Leu	Arg	Val	Phe	Gln	Leu	Glu	Pro	Ser	Asp	Pro	355	360	365
Met	Leu	Trp	Arg	Lys	Thr	Leu	Lys	Asn	Phe	Glu	Val	Glu	Ser	Leu	Phe	370	375	380
Gln	Lys	Tyr	His	Ser	Arg	Arg	Ser	Ser	Arg	Ile	Lys	Ala	Pro	Ser	Arg	385	390	395
Asn	Thr	Ile	Gln	Lys	Phe	Val	Ser	Arg	Met	Ser	Asn	Ser	His	Thr	Leu	405	410	415
Ser	Ser	Ser	Ser	Thr	Ser	Thr	Ser	Ser	Ser	Glu	Asn	Ser	Ile	Lys	Asp	420	425	430
Glu	Glu	Glu	Gln	Met	Cys	Pro	Ile	Cys	Leu	Leu	Gly	Met	Leu	Asp	Glu	435	440	445
Glu	Ser	Leu	Thr	Val	Cys	Glu	Asp	Gly	Cys	Arg	Asn	Lys	Leu	His	His	450	455	460
His	Cys	Met	Ser	Ile	Trp	Ala	Glu	Glu	Cys	Arg	Arg	Asn	Arg	Glu	Pro	465	470	475
Leu	Ile	Cys	Pro	Leu	Cys	Arg	Ser	Lys	Trp	Arg	Ser	His	Asp	Phe	Tyr	485	490	495
Ser	His	Glu	Leu	Ser	Ser	Pro	Val	Glu	Ser	Pro	Ala	Ser	Leu	Arg	Ala	500	505	510
Val	Gln	Gln	Pro	Ser	Ser	Pro	Gln	Gln	Pro	Val	Ala	Gly	Ser	Gln	Arg	515	520	525
Arg	Asn	Gln	Glu	Ser	Ser	Phe	Asn	Leu	Thr	His	Phe	Gly	Thr	Gln	Gln	530	535	540
Ile	Pro	Ser	Ala	Tyr	Lys	Asp	Leu	Ala	Glu	Pro	Trp	Ile	Gln	Val	Phe	545	550	555
Gly	Met	Glu	Leu	Val	Gly	Cys	Leu	Phe	Ser	Arg	Asn	Trp	Asn	Val	Arg	565	570	575
Glu	Met	Ala	Leu	Arg	Arg	Leu	Ser	His	Asp	Val	Ser	Gly	Ala	Leu	Leu	580	585	590

Leu	Ala	Asn	Gly	Glu	Ser	Thr	Gly	Asn	Ser	Gly	Gly	Gly	Ser	Gly	Gly		
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Ser	Leu	Ser	Ala	Gly	Ala	Ala	Ser	Gly	Ser	Ser	Gln	Pro	Ser	Ile	Ser		
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Gly	Asp	Val	Val	Glu	Ala	Cys	Cys	Ser	Val	Leu	Ser	Ile	Val	Cys	Ala		
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Met	Leu	Val	Tyr	Thr	Pro	Cys	His	Ser	Leu	Ala	Glu	Arg	Ile	Lys	Leu		
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Gln	Arg	Leu	Leu	Arg	Pro	Val	Val	Asp	Thr	Ile	Leu	Val	Lys	Cys	Ala		
		675					680					685					
Asp	Ala	Asn	Ser	Arg	Thr	Ser	Gln	Leu	Ser	Ile	Ser	Thr	Val	Leu	Glu		
	690					695					700						
Leu	Cys	Lys	Gly	Gln	Ala	Gly	Glu	Leu	Ala	Val	Gly	Arg	Glu	Ile	Leu		
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Lys	Ala	Gly	Ser	Ile	Gly	Val	Gly	Gly	Val	Asp	Tyr	Val	Leu	Ser	Cys		
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Ile	Leu	Gly	Asn	Gln	Ala	Glu	Ser	Asn	Asn	Trp	Gln	Glu	Leu	Leu	Gly		
			740					745					750				
Arg	Leu	Cys	Leu	Ile	Asp	Arg	Leu	Leu	Leu	Glu	Phe	Pro	Ala	Glu	Phe		
		755					760					765					
Tyr	Pro	His	Ile	Val	Ser	Thr	Asp	Val	Ser	Gln	Ala	Glu	Pro	Val	Glu		
	770					775					780						
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785					790					795					800		
Ile	Asp	Asn	Ser	His	Ser	Met	Val	Gly	Lys	Leu	Ser	Arg	Arg	Ile	Tyr		
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Gln	Ala	Val	Ala	Pro	Thr	Ser	Cys	Leu	Glu	Asn	Ser	Ser	Leu	Glu	His		
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Thr	Val	His	Arg	Glu	Lys	Thr	Gly	Lys	Gly	Leu	Ser	Ala	Thr	Arg	Leu		
			900					905					910				



Ser Ala Ser Ser Glu Asp Ile Ser Asp Arg Leu Ala Gly Val Ser Val  
915 920 925

Gly Leu Pro Ser Ser Thr Thr Thr Glu Gln Pro Lys Pro Ala Val Gln  
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Thr Lys Gly Arg Pro His Ser Gln Cys Leu Asn Ser Ser Pro Leu Ser  
945 950 955 960

His Ala Gln Leu Met Phe Pro Ala Pro Ser Ala Pro Cys Ser Ser Ala  
965 970 975

Pro Ser Val Pro Asp Ile Ser Lys His Arg Pro Gln Ala Phe Val Pro  
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Cys Lys Ile Pro Ser Ala Ser Pro Gln Thr Gln Arg Lys Phe Ser Leu  
995 1000 1005

Gln Phe Gln Arg Asn Cys Ser Glu His Arg Asp Ser Asp Gln Leu Ser  
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Pro Lys Pro Ser Arg Pro Val Pro Gly Ser Thr Ser Lys Leu Gly Asp  
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Ala Thr Lys Ser Ser Met Thr Leu Asp Leu Gly Ser Ala Ser Arg Cys  
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Asp Asp Ser Phe Gly Gly Gly Gly Asn Ser Gly Asn Ala Val Ile Pro  
1075 1080 1085

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Val Asn Thr Glu Leu Asn Ser Ser Ile Glu Asp Leu Leu Glu Ala Ser  
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Leu Ser Pro Glu Lys Ala Glu Asn Asp Asp Thr Tyr Lys Asp Asp Val  
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Ile Val Pro Gln Leu Gln Val Glu Asn Gly Glu Asp Ile Ile Ile Ile  
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Gln Gln Asp Thr Pro Glu Thr Leu Pro Gly His Thr Lys Ala Lys Gln  
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Gln Glu Glu Val Val Glu Ala Leu Arg Glu Glu Ile Arg Met Met Gly  
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Cys Ala Lys Pro Pro Trp Asn Ala Glu Lys His Ser Asn His Leu Ala  
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Leu Ile Phe Lys Ile Ala Ser Ala Thr Thr Ala Pro Ser Ile Pro Ser  
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His Leu Ser Pro Gly Leu Arg Asp Val Ala Val Arg Cys Leu Glu Leu  
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Val Val Val Lys Pro Ile Pro Val Lys Gly Asp Gly Ser Glu Met Asn	
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His Leu Ala Ala Glu Ser Pro Gly Glu Val Gln Ala Ser Ala Ala Ser	
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Pro Ala Ser Lys Gly Arg Arg Ser Pro Ser Pro Gly Asn Ser Pro Ser	
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Gly Arg Thr Val Lys Ser Glu Ser Pro Gly Val Arg Arg Lys Arg Val	
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Ser Pro Val Pro Phe Gln Ser Gly Arg Ile Thr Pro Pro Arg Arg Ala	
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Pro Ser Pro Asp Gly Phe Ser Pro Tyr Ser Pro Glu Glu Thr Asn Arg	
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Cys Ile His Leu Leu Phe Val Met Leu Arg Val Phe Gln Leu Glu Pro	
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Ser Leu Phe Gln Lys Tyr His Ser Arg Arg Ser Ser Arg Ile Lys Ala	
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Pro Ser Arg Asn Thr Ile Gln Lys Phe Val Ser Arg Met Ser Asn Ser	
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Ser	Arg	Arg	Asn	Gln	Glu	Ser	Asn	Phe	Asn	Leu	Thr	His	Tyr	Gly	Thr	
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Gln	Gln	Ile	Pro	Pro	Ala	Tyr	Lys	Asp	Leu	Ala	Glu	Pro	Trp	Ile	Gln	
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Gly	Gly	Ser	Leu	Ser	Ala	Gly	Ala	Ala	Ser	Gly	Ser	Ser	Gln	Pro	Ser	
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Ile	Ser	Gly	Asp	Val	Val	Glu	Ala	Cys	Cys	Ser	Val	Leu	Ser	Ile	Val	
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Cys	Ala	Asp	Pro	Val	Tyr	Lys	Val	Tyr	Val	Ala	Ala	Leu	Lys	Thr	Leu	
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Ile Leu Lys Ala Gly Ser Ile Gly Val Gly Gly Val Asp Tyr Val Leu	
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Ser Lys Leu Val Thr Met Leu Asn Ala Ser Gly Ser Thr His Phe Thr	
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Glu Val Ile Gln Leu Gly Val Glu Asp Thr Val Asp Gly His Gln Asp	
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Glu	His	Thr	Val	His	Arg	Glu	Lys	Thr	Gly	Lys	Gly	Leu	Ser	Ala	Thr	
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Arg	Leu	Ser	Ala	Ser	Ser	Glu	Asp	Ile	Ser	Asp	Arg	Leu	Ala	Gly	Val	
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Ile	Pro	Ser	Asp	Glu	Thr	Val	Phe	Thr	Pro	Val	Glu	Asp	Lys	Cys	Arg	
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Leu	Asp	Val	Asn	Thr	Glu	Leu	Asn	Ser	Ser	Ile	Glu	Asp	Leu	Leu	Glu	
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Asp Val Asn His Asn Gln Lys Cys Lys Glu Lys Met Glu Ala Glu Glu	
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gag gag gct tta gcg atc gcc atg gcg atg tca gcg tct cag gat gcc	2975
Glu Glu Ala Leu Ala Ile Ala Met Ala Met Ser Ala Ser Gln Asp Ala	
980 985 990	
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Leu Pro Ile Val Pro Gln Leu Gln Val Glu Asn Gly Glu Asp Ile Ile	
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Asp Ser Thr Gly Gln Arg Leu Arg Ile Ala Asp Phe Gly Ala Ala Ala	
1170 1175 1180	

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 1235 1240 1245

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gaa ctt cag cct cag gac cgg cct ccg tca aga gag ctg ctg aaa cat 3887  
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 Ala Ser Lys Gly Arg Arg Ser Pro Ser Pro Gly Asn Ser Pro Ser Gly  
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 Arg Thr Val Lys Ser Glu Ser Pro Gly Val Arg Arg Lys Arg Val Ser  
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 Pro Val Pro Phe Gln Ser Gly Arg Ile Thr Pro Pro Arg Arg Ala Pro  
 85 90 95  
 Ser Pro Asp Gly Phe Ser Pro Tyr Ser Pro Glu Glu Thr Asn Arg Arg  
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Val	Asn	Lys	Val	Met	Arg	Ala	Arg	Leu	Tyr	Leu	Leu	Gln	Gln	Ile	Gly	115	120	125
Pro	Asn	Ser	Phe	Leu	Ile	Gly	Gly	Asp	Ser	Pro	Asp	Asn	Lys	Tyr	Arg	130	135	140
Val	Phe	Ile	Gly	Pro	Gln	Asn	Cys	Ser	Cys	Ala	Arg	Gly	Thr	Phe	Cys	145	150	155
Ile	His	Leu	Leu	Phe	Val	Met	Leu	Arg	Val	Phe	Gln	Leu	Glu	Pro	Ser	165	170	175
Asp	Pro	Met	Leu	Trp	Arg	Lys	Thr	Leu	Lys	Asn	Phe	Glu	Val	Glu	Ser	180	185	190
Leu	Phe	Gln	Lys	Tyr	His	Ser	Arg	Arg	Ser	Ser	Arg	Ile	Lys	Ala	Pro	195	200	205
Ser	Arg	Asn	Thr	Ile	Gln	Lys	Phe	Val	Ser	Arg	Met	Ser	Asn	Ser	His	210	215	220
Thr	Leu	Ser	Ser	Ser	Ser	Thr	Ser	Thr	Ser	Ser	Ser	Val	Asn	Ser	Ile	225	230	235
Lys	Asp	Glu	Glu	Glu	Gln	Met	Cys	Pro	Ile	Cys	Leu	Leu	Gly	Met	Leu	245	250	255
Asp	Glu	Glu	Ser	Leu	Thr	Val	Cys	Glu	Asp	Gly	Cys	Arg	Asn	Lys	Leu	260	265	270
His	His	His	Cys	Met	Ser	Ile	Trp	Ala	Glu	Glu	Cys	Arg	Arg	Asn	Arg	275	280	285
Glu	Pro	Leu	Ile	Cys	Pro	Leu	Cys	Arg	Ser	Lys	Trp	Arg	Ser	His	Asp	290	295	300
Phe	Tyr	Ser	His	Glu	Leu	Ser	Ser	Pro	Val	Asp	Ser	Pro	Ser	Ser	Leu	305	310	315
Arg	Ala	Ala	Gln	Gln	Gln	Thr	Val	Gln	Gln	Gln	Pro	Leu	Ala	Gly	Ser	325	330	335
Arg	Arg	Asn	Gln	Glu	Ser	Asn	Phe	Asn	Leu	Thr	His	Tyr	Gly	Thr	Gln	340	345	350
Gln	Ile	Pro	Pro	Ala	Tyr	Lys	Asp	Leu	Ala	Glu	Pro	Trp	Ile	Gln	Val	355	360	365
Phe	Gly	Met	Glu	Leu	Val	Gly	Cys	Leu	Phe	Ser	Arg	Asn	Trp	Asn	Val	370	375	380
Arg	Glu	Met	Ala	Leu	Arg	Arg	Leu	Ser	His	Asp	Val	Ser	Gly	Ala	Leu	385	390	395
Leu	Leu	Ala	Asn	Gly	Glu	Ser	Thr	Gly	Asn	Ser	Gly	Gly	Gly	Ser	Gly	405	410	415
Gly	Ser	Leu	Ser	Ala	Gly	Ala	Ala	Ser	Gly	Ser	Ser	Gln	Pro	Ser	Ile	420	425	430

Ser Gly Asp Val Val Glu Ala Cys Cys Ser Val Leu Ser Ile Val Cys  
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Ala Asp Pro Val Tyr Lys Val Tyr Val Ala Ala Leu Lys Thr Leu Arg  
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Ala Met Leu Val Tyr Thr Pro Cys His Ser Leu Ala Glu Arg Ile Lys  
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Leu Gln Arg Leu Leu Arg Pro Val Val Asp Thr Ile Leu Val Lys Cys  
485 490 495

Ala Asp Ala Asn Ser Arg Thr Ser Gln Leu Ser Ile Ser Thr Val Leu  
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Gly Arg Leu Cys Leu Ile Asp Arg Leu Leu Leu Glu Phe Pro Ala Glu  
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420 Rec'd PCT/PTO 1 2 OCT 1999

## SEQUENCE LISTING

&lt;110&gt; Johnson, Gary L.

&lt;120&gt; MEKK1 PROTEINS AND FRAGMENTS THEREOF FOR USE IN REGULATING APOPTOSIS

&lt;130&gt; CPI-042CPPC

&lt;140&gt; PCT/US99/02974

&lt;141&gt; February 12, 1999

&lt;160&gt; 21

&lt;170&gt; PatentIn Ver. 2.0

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Pro His Ser Gln	Cys Leu Asn Ser Ser Pro Leu Ser His Ala Gln Leu			
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atg ttc cca gca	cca tca gcc cct tgt tcc tct gcc ccg tct gtc cca			962
Met Phe Pro Ala	Pro Ser Ala Pro Cys Ser Ser Ala Pro Ser Val Pro			
	145	150	155	
gat att tct aag	cac aga ccc cag gca ttt gtt ccc tgc aaa ata cct			1010
Asp Ile Ser Lys	His Arg Pro Gln Ala Phe Val Pro Cys Lys Ile Pro			
	160	165	170	175
tcc gca tct cct	cag aca cag cgc aag ttc tct cta caa ttc cag agg			1058
Ser Ala Ser Pro	Gln Thr Gln Arg Lys Phe Ser Leu Gln Phe Gln Arg			
	180	185	190	
aac tgc tct gaa	cac cga gac tca gac cag ctc tcc cca gtc ttc act			1106
Asn Cys Ser Glu	His Arg Asp Ser Asp Gln Leu Ser Pro Val Phe Thr			
	195	200	205	
cag tca aga ccc	cca ccc tcc agt aac ata cac agg cca aag cca tcc			1154
Gln Ser Arg Pro	Pro Pro Ser Ser Asn Ile His Arg Pro Lys Pro Ser			
	210	215	220	
cga ccc gtt ccg	ggc agt aca agc aaa cta ggg gac gcc aca aaa agt			1202
Arg Pro Val Pro	Gly Ser Thr Ser Lys Leu Gly Asp Ala Thr Lys Ser			
	225	230	235	
agc atg aca ctt	gat ctg ggc agt gct tcc agg tgt gac gac agc ttt			1250
Ser Met Thr Leu	Asp Leu Gly Ser Ala Ser Arg Cys Asp Asp Ser Phe			
	240	245	250	255
ggc ggc ggc ggc	aac agt ggc aac gcc gtc ata ccc agc gac gag aca			1298
Gly Gly Gly Gly	Asn Ser Gly Asn Ala Val Ile Pro Ser Asp Glu Thr			
	260	265	270	
gtg ttc acg ccg	gtg gag gac aag tgc agg tta gat gtg aac acc gag			1346
Val Phe Thr Pro	Val Glu Asp Lys Cys Arg Leu Asp Val Asn Thr Glu			
	275	280	285	
ctc aac tcc agc	atc gag gac ctt ctt gaa gca tcc atg cct tca agt			1394
Leu Asn Ser Ser	Ile Glu Asp Leu Leu Glu Ala Ser Met Pro Ser Ser			
	290	295	300	
gac acg aca gtc	act ttc aag tcc gaa gtc gcc gtc ctc tct ccg gaa			1442
Asp Thr Thr Val	Thr Phe Lys Ser Glu Val Ala Val Leu Ser Pro Glu			
	305	310	315	
aag gcc gaa aat	gac gac acc tac aaa gac gac gtc aat cat aat caa			1490
Lys Ala Glu Asn	Asp Asp Thr Tyr Lys Asp Asp Val Asn His Asn Gln			
	320	325	330	335

aag tgc aaa gaa aag atg gaa gct gaa gag gag gag gct tta gcg atc Lys Cys Lys Glu Lys Met Glu Ala Glu Glu Glu Glu Ala Leu Ala Ile 340 345 350	1538
gcc atg gcg atg tca gcg tct cag gat gcc ctc ccc atc gtc cct cag Ala Met Ala Met Ser Ala Ser Gln Asp Ala Leu Pro Ile Val Pro Gln 355 360 365	1586
ctg cag gtg gaa aat gga gaa gat att atc atc att cag cag gac aca Leu Gln Val Glu Asn Gly Glu Asp Ile Ile Ile Ile Gln Gln Asp Thr 370 375 380	1634
cca gaa act ctt cca gga cat acc aaa gcg aaa cag cct tac aga gaa Pro Glu Thr Leu Pro Gly His Thr Lys Ala Lys Gln Pro Tyr Arg Glu 385 390 395	1682
gac gct gag tgg ctg aaa ggc cag cag ata ggc ctc gga gca ttt tct Asp Ala Glu Trp Leu Lys Gly Gln Gln Ile Gly Leu Gly Ala Phe Ser 400 405 410 415	1730
tcc tgt tac caa gca cag gat gtg ggg act ggg act tta atg gct gtg Ser Cys Tyr Gln Ala Gln Asp Val Gly Thr Gly Thr Leu Met Ala Val 420 425 430	1778
aaa cag gtg acg tac gtc aga aac aca tcc tcc gag cag gag gag gtg Lys Gln Val Thr Tyr Val Arg Asn Thr Ser Ser Glu Gln Glu Glu Val 435 440 445	1826
gtg gaa gcg ttg agg gaa gag atc cgg atg atg ggt cac ctc aac cat Val Glu Ala Leu Arg Glu Glu Ile Arg Met Met Gly His Leu Asn His 450 455 460	1874
cca aac atc atc cgg atg ctg ggg gcc acg tgc gag aag agc aac tac Pro Asn Ile Ile Arg Met Leu Gly Ala Thr Cys Glu Lys Ser Asn Tyr 465 470 475	1922
aac ctc ttc att gag tgg atg gcg gga gga tct gtg gct cac ctc ttg Asn Leu Phe Ile Glu Trp Met Ala Gly Gly Ser Val Ala His Leu Leu 480 485 490 495	1970
agt aaa tac gga gct ttc aag gag tca gtc gtc att aac tac act gag Ser Lys Tyr Gly Ala Phe Lys Glu Ser Val Val Ile Asn Tyr Thr Glu 500 505 510	2018
cag tta ctg cgt ggc ctt tcc tat ctc cac gag aac cag atc att cac Gln Leu Leu Arg Gly Leu Ser Tyr Leu His Glu Asn Gln Ile Ile His 515 520 525	2066
aga gac gtc aaa ggt gcc aac ctg ctc att gac agc acc ggt cag agg Arg Asp Val Lys Gly Ala Asn Leu Leu Ile Asp Ser Thr Gly Gln Arg 530 535 540	2114
ctg aga att gca gac ttt gga gct gct gcc agg ttg gca tca aaa gga Leu Arg Ile Ala Asp Phe Gly Ala Ala Ala Arg Leu Ala Ser Lys Gly 545 550 555	2162
acc ggt gca gga gag ttc cag gga cag tta ctg ggg aca att gca ttc Thr Gly Ala Gly Glu Phe Gln Gly Gln Leu Leu Gly Thr Ile Ala Phe 560 565 570 575	2210

atg gcg cct gag gtc cta aga ggt cag cag tat ggt agg agc tgt gat 2258  
 Met Ala Pro Glu Val Leu Arg Gly Gln Gln Tyr Gly Arg Ser Cys Asp  
 580 585 590

gta tgg agt gtt ggc tgc gcc att ata gaa atg gct tgt gca aaa cca 2306  
 Val Trp Ser Val Gly Cys Ala Ile Ile Glu Met Ala Cys Ala Lys Pro  
 595 600 605

cct tgg aat gca gaa aaa cac tcc aat cat ctc gcc ttg ata ttt aag 2354  
 Pro Trp Asn Ala Glu Lys His Ser Asn His Leu Ala Leu Ile Phe Lys  
 610 615 620

att gct agc gca act act gca ccg tcc atc ccg tca cac ctg tcc ccg 2402  
 Ile Ala Ser Ala Thr Thr Ala Pro Ser Ile Pro Ser His Leu Ser Pro  
 625 630 635

ggt ctg cgc gac gtg gcc gtg cgc tgc tta gaa ctt cag cct cag gac 2450  
 Gly Leu Arg Asp Val Ala Val Arg Cys Leu Glu Leu Gln Pro Gln Asp  
 640 645 650 655

cgg cct ccg tcc aga gag ctg ctg aaa cat ccg gtc ttc cgt acc acg 2498  
 Arg Pro Pro Ser Arg Glu Leu Leu Lys His Pro Val Phe Arg Thr Thr  
 660 665 670

tgg tagttaattg ttcagatcag ctctaattgga gacaggatat cgaaccggga 2551  
 Trp

gagagaaaag agaacttggtg ggcgaccatg ccgctaaccg cagccctcac gccactgaac 2611

agccagaaac ggggccagcg gggaaccgta cctaagcatg tgattgacaa atcatgacct 2671

gtacctaagc tcgatatgca gacatctaca gctcgtgcag gaactgcaca ccgtgccttt 2731

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&lt;211&gt; 672

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 2

Met Val Thr Ala Val Pro Ala Val Phe Ser Lys Leu Val Thr Met Leu  
 1 5 10 15

Asn Ala Ser Gly Ser Thr His Phe Thr Arg Met Arg Arg Arg Leu Met  
 20 25 30  
 Ala Ile Ala Asp Glu Val Glu Ile Ala Glu Val Ile Gln Leu Gly Val  
 35 40 45  
 Glu Asp Thr Val Asp Gly His Gln Asp Ser Leu Gln Ala Val Ala Pro  
 50 55 60  
 Thr Ser Cys Leu Glu Asn Ser Ser Leu Glu His Thr Val His Arg Glu  
 65 70 75 80  
 Lys Thr Gly Lys Gly Leu Ser Ala Thr Arg Leu Ser Ala Ser Ser Glu  
 85 90 95  
 Asp Ile Ser Asp Arg Leu Ala Gly Val Ser Val Gly Leu Pro Ser Ser  
 100 105 110  
 Thr Thr Thr Glu Gln Pro Lys Pro Ala Val Gln Thr Lys Gly Arg Pro  
 115 120 125  
 His Ser Gln Cys Leu Asn Ser Ser Pro Leu Ser His Ala Gln Leu Met  
 130 135 140  
 Phe Pro Ala Pro Ser Ala Pro Cys Ser Ser Ala Pro Ser Val Pro Asp  
 145 150 155 160  
 Ile Ser Lys His Arg Pro Gln Ala Phe Val Pro Cys Lys Ile Pro Ser  
 165 170 175  
 Ala Ser Pro Gln Thr Gln Arg Lys Phe Ser Leu Gln Phe Gln Arg Asn  
 180 185 190  
 Cys Ser Glu His Arg Asp Ser Asp Gln Leu Ser Pro Val Phe Thr Gln  
 195 200 205  
 Ser Arg Pro Pro Pro Ser Ser Asn Ile His Arg Pro Lys Pro Ser Arg  
 210 215 220  
 Pro Val Pro Gly Ser Thr Ser Lys Leu Gly Asp Ala Thr Lys Ser Ser  
 225 230 235 240  
 Met Thr Leu Asp Leu Gly Ser Ala Ser Arg Cys Asp Asp Ser Phe Gly  
 245 250 255  
 Gly Gly Gly Asn Ser Gly Asn Ala Val Ile Pro Ser Asp Glu Thr Val  
 260 265 270  
 Phe Thr Pro Val Glu Asp Lys Cys Arg Leu Asp Val Asn Thr Glu Leu  
 275 280 285  
 Asn Ser Ser Ile Glu Asp Leu Leu Glu Ala Ser Met Pro Ser Ser Asp  
 290 295 300  
 Thr Thr Val Thr Phe Lys Ser Glu Val Ala Val Leu Ser Pro Glu Lys  
 305 310 315 320  
 Ala Glu Asn Asp Asp Thr Tyr Lys Asp Asp Val Asn His Asn Gln Lys  
 325 330 335  
 Cys Lys Glu Lys Met Glu Ala Glu Glu Glu Glu Ala Leu Ala Ile Ala





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 <211> 5253  
 <212> DNA  
 <213> Murine

<220>  
 <221> CDS  
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                                   Met Ala Ala Ala Ala Gly Asp Arg Ala Ser Ser Ser  
                                   1                                  5                                  10

gga ttc ccg ggc gcc gcg gcg gcg agt ccc gag gcg ggc ggc ggc ggc 98  
 Gly Phe Pro Gly Ala Ala Ala Ala Ser Pro Glu Ala Gly Gly Gly Gly  
                                   15                                  20                                  25

gga gga gga gga gct ctc cag gga agc ggc gcg ccc gca gcg ggc gcg 146  
 Gly Gly Gly Gly Ala Leu Gln Gly Ser Gly Ala Pro Ala Ala Gly Ala  
                                   30                                  35                                  40

gcg ggg ctg ctg cgg gag cct ggc agc gcg ggc cgc gag cgc gcg gac 194  
 Ala Gly Leu Leu Arg Glu Pro Gly Ser Ala Gly Arg Glu Arg Ala Asp  
                                   45                                  50                                  55                                  60

tgg cgg cgg cgg cac gtg cgc aaa gtg cgg agt gtg gag ctg gac cag 242  
 Trp Arg Arg Arg His Val Arg Lys Val Arg Ser Val Glu Leu Asp Gln  
                                   65                                  70                                  75

ctg ccg gag cag ccg ctc ttc ctc gcc gcc gcc tcg ccg ccc tgc cca 290  
 Leu Pro Glu Gln Pro Leu Phe Leu Ala Ala Ala Ser Pro Pro Cys Pro  
                                   80                                  85                                  90

tct act tcc ccg tcg ccg gag ccc gcg gac gcg gct gca gga gcg agt 338  
 Ser Thr Ser Pro Ser Pro Glu Pro Ala Asp Ala Ala Gly Ala Ser  
                                   95                                  100                                  105

cgc ttc cag ccc gcg gcg gga ccg cca ccc ccg gga gcg gcg agt cgc 386  
 Arg Phe Gln Pro Ala Ala Gly Pro Pro Pro Pro Gly Ala Ala Ser Arg  
                                   110                                  115                                  120

tgc ggc tcc cac tct gcc gag ctg gcg gcc gcg cgg gac agc ggc gcc 434  
 Cys Gly Ser His Ser Ala Glu Leu Ala Ala Ala Arg Asp Ser Gly Ala  
                                   125                                  130                                  135                                  140

cgg agc ccc gcg ggg gcg gag ccg ccc tct gca gcg gcc ccc tcc ggt 482  
 Arg Ser Pro Ala Gly Ala Glu Pro Pro Ser Ala Ala Ala Pro Ser Gly  
                                   145                                  150                                  155

cga gag atg gag aat aaa gaa acc ctc aaa gga ctg cac aag atg gag 530  
 Arg Glu Met Glu Asn Lys Glu Thr Leu Lys Gly Leu His Lys Met Glu  
                                   160                                  165                                  170

gat cgc ccg gag gag aga atg atc cgg gag aag ctc aag gcg acc tgt 578  
 Asp Arg Pro Glu Glu Arg Met Ile Arg Glu Lys Leu Lys Ala Thr Cys  
                                   175                                  180                                  185

atg ccg gcc tgg aag cac gag tgg ttg gag agg agg aac agg aga ggc 626

Met	Pro	Ala	Trp	Lys	His	Glu	Trp	Leu	Glu	Arg	Arg	Asn	Arg	Arg	Gly		
190						195					200						
cct	gtg	gtg	gtg	aag	cca	atc	cct	att	aaa	gga	gat	gga	tct	gaa	gtg	674	
Pro	Val	Val	Val	Lys	Pro	Ile	Pro	Ile	Lys	Gly	Asp	Gly	Ser	Glu	Val		
205					210					215					220		
aat	aac	ttg	gca	gct	gag	ccc	cag	gga	gag	ggc	cag	gca	ggt	tcc	gct	722	
Asn	Asn	Leu	Ala	Ala	Glu	Pro	Gln	Gly	Glu	Gly	Gln	Ala	Gly	Ser	Ala		
				225					230						235		
gca	cca	gcc	ccc	aag	ggc	cga	cga	agc	cca	tct	cct	ggc	agc	tct	ccg	770	
Ala	Pro	Ala	Pro	Lys	Gly	Arg	Arg	Ser	Pro	Ser	Pro	Gly	Ser	Ser	Pro		
			240					245						250			
tca	ggg	cgc	tcg	gtg	aag	ccg	gaa	tcc	cca	gga	gta	aga	cgg	aaa	cga	818	
Ser	Gly	Arg	Ser	Val	Lys	Pro	Glu	Ser	Pro	Gly	Val	Arg	Arg	Lys	Arg		
			255				260					265					
gtg	tcc	ccg	gtg	cct	ttc	cag	agt	ggc	aga	atc	aca	cca	ccc	cga	aga	866	
Val	Ser	Pro	Val	Pro	Phe	Gln	Ser	Gly	Arg	Ile	Thr	Pro	Pro	Arg	Arg		
			270			275					280						
gcc	cca	tca	ccg	gat	ggc	ttc	tcc	ccg	tac	agc	cca	gag	gag	acg	agc	914	
Ala	Pro	Ser	Pro	Asp	Gly	Phe	Ser	Pro	Tyr	Ser	Pro	Glu	Glu	Thr	Ser		
285					290					295					300		
cgc	cgc	gtg	aac	aaa	gtg	atg	aga	gcc	agg	ctg	tac	ctg	ctg	cag	cag	962	
Arg	Arg	Val	Asn	Lys	Val	Met	Arg	Ala	Arg	Leu	Tyr	Leu	Leu	Gln	Gln		
				305					310						315		
ata	gga	ccc	aac	tct	ttc	ctg	att	gga	gga	gac	agt	cca	gac	aat	aaa	1010	
Ile	Gly	Pro	Asn	Ser	Phe	Leu	Ile	Gly	Gly	Asp	Ser	Pro	Asp	Asn	Lys		
				320				325						330			
tac	cgg	gtg	ttt	att	ggg	cca	cag	aac	tgc	agc	tgt	ggg	cgt	gga	gca	1058	
Tyr	Arg	Val	Phe	Ile	Gly	Pro	Gln	Asn	Cys	Ser	Cys	Gly	Arg	Gly	Ala		
			335				340					345					
ttc	tgt	att	cac	ctc	ttg	ttt	gtc	atg	ctc	cgg	gtg	ttt	cag	cta	gaa	1106	
Phe	Cys	Ile	His	Leu	Leu	Phe	Val	Met	Leu	Arg	Val	Phe	Gln	Leu	Glu		
						355					360						
ccc	tct	gac	ccc	atg	tta	tgg	aga	aaa	act	tta	aaa	aat	ttc	gag	gtt	1154	
Pro	Ser	Asp	Pro	Met	Leu	Trp	Arg	Lys	Thr	Leu	Lys	Asn	Phe	Glu	Val		
365					370					375					380		
gag	agt	ttg	ttc	cag	aaa	tac	cac	agt	agg	cgt	agc	tcg	aga	atc	aaa	1202	
Glu	Ser	Leu	Phe	Gln	Lys	Tyr	His	Ser	Arg	Arg	Ser	Ser	Arg	Ile	Lys		
				385					390					395			
gct	cca	tcc	cgg	aac	acc	atc	cag	aag	ttt	gtg	tca	cgc	atg	tca	aat	1250	
Ala	Pro	Ser	Arg	Asn	Thr	Ile	Gln	Lys	Phe	Val	Ser	Arg	Met	Ser	Asn		
				400				405						410			
tct	cac	aca	ctg	tca	tcg	tct	agc	aca	tcc	aca	tct	agt	tca	gaa	aac	1298	
Ser	His	Thr	Leu	Ser	Ser	Ser	Ser	Thr	Ser	Thr	Ser	Ser	Ser	Ser	Glu	Asn	
			415					420						425			
agc	atc	aag	gat	gaa	gag	gag	cag	atg	tgt	ccc	atc	tgc	ttg	ctg	ggc	1346	
Ser	Ile	Lys	Asp	Glu	Glu	Glu	Gln	Met	Cys	Pro	Ile	Cys	Leu	Leu	Gly		

430	435	440	
atg ctg gat gag gag agc ctg act gtg tgt gaa gat ggc tgc agg aac			1394
Met Leu Asp Glu Glu Ser Leu Thr Val Cys Glu Asp Gly Cys Arg Asn			
445	450	455	460
aag ctg cac cac cat tgc atg tcc atc tgg gcg gaa gag tgt aga aga			1442
Lys Leu His His His Cys Met Ser Ile Trp Ala Glu Glu Cys Arg Arg			
	465	470	475
aat aga gag cct tta ata tgt ccc ctt tgt aga tct aag tgg aga tcc			1490
Asn Arg Glu Pro Leu Ile Cys Pro Leu Cys Arg Ser Lys Trp Arg Ser			
	480	485	490
cat gac ttc tac agc cat gag tta tca agc ccc gtg gag tcc ccc gcc			1538
His Asp Phe Tyr Ser His Glu Leu Ser Ser Pro Val Glu Ser Pro Ala			
	495	500	505
tcc ctg cga gct gtc cag cag cca tcc tcc ccg cag cag ccc gtg gcc			1586
Ser Leu Arg Ala Val Gln Gln Pro Ser Ser Pro Gln Gln Pro Val Ala			
	510	515	520
gga tca cag cgg agg aat cag gag agc agt ttt aac ctt act cat ttt			1634
Gly Ser Gln Arg Arg Asn Gln Glu Ser Ser Phe Asn Leu Thr His Phe			
	525	530	535
gga acc cag cag att cct tcc gct tac aaa gat ttg gcc gag cca tgg			1682
Gly Thr Gln Gln Ile Pro Ser Ala Tyr Lys Asp Leu Ala Glu Pro Trp			
	545	550	555
att cag gtg ttt gga atg gaa ctc gtt ggc tgc tta ttc tct aga aac			1730
Ile Gln Val Phe Gly Met Glu Leu Val Gly Cys Leu Phe Ser Arg Asn			
	560	565	570
tgg aac gta agg gaa atg gcc ctt agg cgt ctt tcc cac gac gtt agt			1778
Trp Asn Val Arg Glu Met Ala Leu Arg Arg Leu Ser His Asp Val Ser			
	575	580	585
ggg gcc ctg ttg ttg gca aac ggg gag agc act gga aac tct gga gcc			1826
Gly Ala Leu Leu Leu Ala Asn Gly Glu Ser Thr Gly Asn Ser Gly Gly			
	590	595	600
ggc agt ggg ggc agc tta agc gcg gga gcg gcc agc ggg tcc tcc cag			1874
Gly Ser Gly Gly Ser Leu Ser Ala Gly Ala Ala Ser Gly Ser Ser Gln			
	605	610	615
ccc agc atc tca ggg gat gtg gtg gag gcg tgc tgc agt gtc ctg tct			1922
Pro Ser Ile Ser Gly Asp Val Val Glu Ala Cys Cys Ser Val Leu Ser			
	625	630	635
ata gtc tgc gct gac cct gtc tac aaa gtg tac gtt gct gct tta aaa			1970
Ile Val Cys Ala Asp Pro Val Tyr Lys Val Tyr Val Ala Ala Leu Lys			
	640	645	650
aca ttg aga gcc atg ctg gta tac act cct tgc cac agt ctg gca gaa			2018
Thr Leu Arg Ala Met Leu Val Tyr Thr Pro Cys His Ser Leu Ala Glu			
	655	660	665
aga atc aaa ctt cag aga ctc ctc cgg cca gtt gta gac act atc ctt			2066
Arg Ile Lys Leu Gln Arg Leu Leu Arg Pro Val Val Asp Thr Ile Leu			
	670	675	680

gtc aag tgt gca gat gcc aac agc cgc acg agt cag ctg tcc ata tct Val Lys Cys Ala Asp Ala Asn Ser Arg Thr Ser Gln Leu Ser Ile Ser 685 690 695 700	2114
aca gtg ctg gaa ctc tgc aag ggc caa gca gga gag ctg gcg gtt ggg Thr Val Leu Glu Leu Cys Lys Gly Gln Ala Gly Glu Leu Ala Val Gly 705 710 715	2162
aga gaa ata ctt aaa gct ggg tcc atc ggg gtt ggt ggt gtc gat tac Arg Glu Ile Leu Lys Ala Gly Ser Ile Gly Val Gly Gly Val Asp Tyr 720 725 730	2210
gtc tta agt tgt atc ctt gga aac caa gct gaa tca aac aac tgg caa Val Leu Ser Cys Ile Leu Gly Asn Gln Ala Glu Ser Asn Asn Trp Gln 735 740 745	2258
gaa ctg ctg ggt cgc ctc tgt ctt ata gac agg ttg ctg ttg gaa ttt Glu Leu Leu Gly Arg Leu Cys Leu Ile Asp Arg Leu Leu Leu Glu Phe 750 755 760	2306
cct gct gaa ttc tat cct cat att gtc agt act gat gtc tca caa gct Pro Ala Glu Phe Tyr Pro His Ile Val Ser Thr Asp Val Ser Gln Ala 765 770 775 780	2354
gag cct gtt gaa atc agg tac aag aag ctg ctc tcc ctc tta acc ttt Glu Pro Val Glu Ile Arg Tyr Lys Lys Leu Leu Ser Leu Leu Thr Phe 785 790 795	2402
gcc ttg caa tcc att gac aat tcc cac tcg atg gtt ggc aag ctc tct Ala Leu Gln Ser Ile Asp Asn Ser His Ser Met Val Gly Lys Leu Ser 800 805 810	2450
cgg agg ata tat ctg agc tct gcc agg atg gtg acc gca gtg ccc gct Arg Arg Ile Tyr Leu Ser Ser Ala Arg Met Val Thr Ala Val Pro Ala 815 820 825	2498
gtg ttt tcc aag ctg gta acc atg ctt aat gct tct ggc tcc acc cac Val Phe Ser Lys Leu Val Thr Met Leu Asn Ala Ser Gly Ser Thr His 830 835 840	2546
ttc acc agg atg cgc cgg cgt ctg atg gct atc gcg gat gag gta gaa Phe Thr Arg Met Arg Arg Arg Leu Met Ala Ile Ala Asp Glu Val Glu 845 850 855 860	2594
att gcc gag gtc atc cag ctg ggt gtg gag gac act gtg gat ggg cat Ile Ala Glu Val Ile Gln Leu Gly Val Glu Asp Thr Val Asp Gly His 865 870 875	2642
cag gac agc tta cag gcc gtg gcc ccc acc agc tgt cta gaa aac agc Gln Asp Ser Leu Gln Ala Val Ala Pro Thr Ser Cys Leu Glu Asn Ser 880 885 890	2690
tcc ctt gag cac aca gtc cat aga gag aaa act gga aaa gga cta agt Ser Leu Glu His Thr Val His Arg Glu Lys Thr Gly Lys Gly Leu Ser 895 900 905	2738
gct acg aga ctg agt gcc agc tcg gag gac att tct gac aga ctg gcc Ala Thr Arg Leu Ser Ala Ser Ser Glu Asp Ile Ser Asp Arg Leu Ala 910 915 920	2786

ggc gtc tct gta gga ctt ccc agc tca aca aca aca gaa caa cca aag	2834
Gly Val Ser Val Gly Leu Pro Ser Ser Thr Thr Thr Glu Gln Pro Lys	
925 930 935 940	
cca gcg gtt caa aca aaa ggc aga ccc cac agt cag tgt ttg aac tcc	2882
Pro Ala Val Gln Thr Lys Gly Arg Pro His Ser Gln Cys Leu Asn Ser	
945 950 955	
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Ser Pro Leu Ser His Ala Gln Leu Met Phe Pro Ala Pro Ser Ala Pro	
960 965 970	
tgt tcc tct gcc ccg tct gtc cca gat att tct aag cac aga ccc cag	2978
Cys Ser Ser Ala Pro Ser Val Pro Asp Ile Ser Lys His Arg Pro Gln	
975 980 985	
gca ttt gtt ccc tgc aaa ata cct tcc gca tct cct cag aca cag cgc	3026
Ala Phe Val Pro Cys Lys Ile Pro Ser Ala Ser Pro Gln Thr Gln Arg	
990 995 1000	
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Lys Phe Ser Leu Gln Phe Gln Arg Asn Cys Ser Glu His Arg Asp Ser	
1005 1010 1015 1020	
gac cag ctc tcc cca gtc ttc act cag tca aga ccc cca ccc tcc agt	3122
Asp Gln Leu Ser Pro Val Phe Thr Gln Ser Arg Pro Pro Pro Ser Ser	
1025 1030 1035	
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Asn Ile His Arg Pro Lys Pro Ser Arg Pro Val Pro Gly Ser Thr Ser	
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gct tcc agg tgt gac gac agc ttt ggc ggc ggc ggc aac agt ggc aac	3266
Ala Ser Arg Cys Asp Asp Ser Phe Gly Gly Gly Gly Asn Ser Gly Asn	
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Cys Arg Leu Asp Val Asn Thr Glu Leu Asn Ser Ser Ile Glu Asp Leu	
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Asn His Leu Ala Leu Ile Phe Lys Ile Ala Ser Ala Thr Thr Ala Pro				
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Ser Ile Pro Ser His Leu Ser Pro Gly Leu Arg Asp Val Ala Val Arg				
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Cys Leu Glu Leu Gln Pro Gln Asp Arg Pro Pro Ser Arg Glu Leu Leu				
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Lys His Pro Val Phe Arg Thr Thr Trp				
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 Pro Leu Phe Leu Ala Ala Ala Ser Pro Pro Cys Pro Ser Thr Ser Pro  
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 Ser Pro Glu Pro Ala Asp Ala Ala Ala Gly Ala Ser Arg Phe Gln Pro  
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 Ser Ala Glu Leu Ala Ala Ala Arg Asp Ser Gly Ala Arg Ser Pro Ala  
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 Glu Arg Met Ile Arg Glu Lys Leu Lys Ala Thr Cys Met Pro Ala Trp  
 180 185 190  
 Lys His Glu Trp Leu Glu Arg Arg Asn Arg Arg Gly Pro Val Val Val  
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 Lys Pro Ile Pro Ile Lys Gly Asp Gly Ser Glu Val Asn Asn Leu Ala  
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 Ala Glu Pro Gln Gly Glu Gly Gln Ala Gly Ser Ala Ala Pro Ala Pro  
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 Lys Gly Arg Arg Ser Pro Ser Pro Gly Ser Ser Pro Ser Gly Arg Ser  
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 Val Lys Pro Glu Ser Pro Gly Val Arg Arg Lys Arg Val Ser Pro Val  
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 Pro Phe Gln Ser Gly Arg Ile Thr Pro Pro Arg Arg Ala Pro Ser Pro  
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 Asp Gly Phe Ser Pro Tyr Ser Pro Glu Glu Thr Ser Arg Arg Val Asn  
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Gln	Arg	Leu	Leu	Arg	Pro	Val	Val	Asp	Thr	Ile	Leu	Val	Lys	Cys	Ala	
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 Leu Val Thr Met Leu Asn Ala Ser Gly Ser Thr His Phe Thr Arg Met  
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 850 855 860  
 Ile Gln Leu Gly Val Glu Asp Thr Val Asp Gly His Gln Asp Ser Leu  
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 Thr Lys Gly Arg Pro His Ser Gln Cys Leu Asn Ser Ser Pro Leu Ser  
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 Cys Ala Lys Pro Pro Trp Asn Ala Glu Lys His Ser Asn His Leu Ala  
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 His Leu Ser Pro Gly Leu Arg Asp Val Ala Val Arg Cys Leu Glu Leu  
                     1460                      1465                      1470  
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 Val Val Val Lys Pro Ile Pro Val Lys Gly Asp Gly Ser Glu Met Asn  
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 His Leu Ala Ala Glu Ser Pro Gly Glu Val Gln Ala Ser Ala Ala Ser  
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 Pro Ala Ser Lys Gly Arg Arg Ser Pro Ser Pro Gly Asn Ser Pro Ser  
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cct tca cca gat ggc ttc tca cca tat agc cct gag gaa aca aac cgc			335
Pro Ser Pro Asp Gly Phe Ser Pro Tyr Ser Pro Glu Glu Thr Asn Arg			
	100	105	110
cgt gtt aac aaa gtg atg cgg gcc aga ctg tac tta ctg cag cag ata			383
Arg Val Asn Lys Val Met Arg Ala Arg Leu Tyr Leu Leu Gln Gln Ile			
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ggg cct aac tct ttc ctg att gga gga gac agc cca gac aat aaa tac			431
Gly Pro Asn Ser Phe Leu Ile Gly Gly Asp Ser Pro Asp Asn Lys Tyr			
	130	135	140
cgg gtg ttt att ggg cct cag aac tgc agc tgt gca cgt gga aca ttc			479
Arg Val Phe Ile Gly Pro Gln Asn Cys Ser Cys Ala Arg Gly Thr Phe			
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Ser Asp Pro Met Leu Trp Arg Lys Thr Leu Lys Asn Phe Glu Val Glu			
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Ser Leu Phe Gln Lys Tyr His Ser Arg Arg Ser Ser Arg Ile Lys Ala			
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Asp Phe Tyr Ser His Glu Leu Ser Ser Pro Val Asp Ser Pro Ser Ser			
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Gln Gln Ile Pro Pro Ala Tyr Lys Asp Leu Ala Glu Pro Trp Ile Gln	
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Val Arg Glu Met Ala Leu Arg Arg Leu Ser His Asp Val Ser Gly Ala	
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Gly Gly Ser Leu Ser Ala Gly Ala Ala Ser Gly Ser Ser Gln Pro Ser	
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Cys Ala Asp Pro Val Tyr Lys Val Tyr Val Ala Ala Leu Lys Thr Leu	
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Arg Ala Met Leu Val Tyr Thr Pro Cys His Ser Leu Ala Glu Arg Ile	
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Lys Leu Gln Arg Leu Leu Arg Pro Val Val Asp Thr Ile Leu Val Lys	
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Leu Glu Leu Cys Asn Gly Gln Ala Gly Lys Leu Ala Val Gly Arg Glu	
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Leu Gly Arg Leu Cys Leu Ile Asp Arg Leu Leu Leu Glu Phe Pro Ala	
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gaa ttc tat cct cat att gtc agt act gat gtc tca caa gct gag cct	1775
Glu Phe Tyr Pro His Ile Val Ser Thr Asp Val Ser Gln Ala Glu Pro	
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gtt gaa atc agg tac aag aag ctg ctc tcc ctc tta acc ttt gcc ttg	1823
Val Glu Ile Arg Tyr Lys Lys Leu Leu Ser Leu Leu Thr Phe Ala Leu	
595 600 605	
caa tcc att gac aat tcc cac tcg atg gtt ggc aag ctc tct cgg agg	1871
Gln Ser Ile Asp Asn Ser His Ser Met Val Gly Lys Leu Ser Arg Arg	
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ata tat ctg agc tct gcc agg atg gtg acc gca gtg ccc gct gtg ttt	1919
Ile Tyr Leu Ser Ser Ala Arg Met Val Thr Ala Val Pro Ala Val Phe	
625 630 635	
tcc aag ctg gta acc atg ctt aat gct tct ggc tcc acc cac ttc acc	1967
Ser Lys Leu Val Thr Met Leu Asn Ala Ser Gly Ser Thr His Phe Thr	
640 645 650 655	
agg atg cgc cgg cgt ctg atg gct atc gcg gat gag gta gaa att gcc	2015
Arg Met Arg Arg Arg Leu Met Ala Ile Ala Asp Glu Val Glu Ile Ala	
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gag gtc atc cag ctg ggt gtg gag gac act gtg gat ggg cat cag gac	2063
Glu Val Ile Gln Leu Gly Val Glu Asp Thr Val Asp Gly His Gln Asp	
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Ser Leu Gln Ala Leu Ala Pro Ala Ser Cys Leu Glu Asn Ser Ser Leu	
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Glu His Thr Val His Arg Glu Lys Thr Gly Lys Gly Leu Ser Ala Thr	
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Arg Leu Ser Ala Ser Ser Glu Asp Ile Ser Asp Arg Leu Ala Gly Val	
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tct gta gga ctt ccc agc tca aca aca aca gaa caa cca aag cca gcg	2255
Ser Val Gly Leu Pro Ser Ser Thr Thr Thr Glu Gln Pro Lys Pro Ala	
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Val Gln Thr Lys Gly Arg Pro His Ser Gln Cys Leu Asn Ser Ser Pro	
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Leu Ser His Ala Gln Leu Met Phe Pro Ala Pro Ser Ala Pro Cys Ser	
770 775 780	
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Ser Ala Pro Ser Val Pro Asp Ile Ser Lys His Arg Pro Gln Ala Phe	
785 790 795	
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Val 800	Pro	Cys	Lys	Ile	Pro 805	Ser	Ala	Ser	Pro	Gln 810	Thr	Gln	Arg	Lys	Phe 815	
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ctc	tcc	cca	gtc	ttc	act	cag	tca	aga	ccc	cca	ccc	tcc	agt	aac	ata	2543
Leu	Ser	Pro	Val	Phe	Thr	Gln	Ser	Arg	Pro	Pro	Pro	Ser	Ser	Asn	Ile	
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His	Arg	Pro	Lys	Pro	Ser	Arg	Pro	Val	Pro	Gly	Ser	Thr	Ser	Lys	Leu	
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Gly	Asp	Ala	Thr	Lys	Ser	Ser	Met	Thr	Leu	Asp	Leu	Gly	Ser	Ala	Ser	
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Arg	Cys	Asp	Asp	Ser	Phe	Gly	Gly	Gly	Gly	Asn	Ser	Gly	Asn	Ala	Val	
880					885					890					895	
ata	ccc	agc	gac	gag	aca	gtg	ttc	acg	ccg	gtg	gag	gac	aag	tgc	agg	2735
Ile	Pro	Ser	Asp	Glu	Thr	Val	Phe	Thr	Pro	Val	Glu	Asp	Lys	Cys	Arg	
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Leu	Asp	Val	Asn	Thr	Glu	Leu	Asn	Ser	Ser	Ile	Glu	Asp	Leu	Leu	Glu	
			915					920					925			
gca	tcc	atg	cct	tca	agt	gac	acg	aca	gtc	act	ttc	aag	tcc	gaa	gtc	2831
Ala	Ser	Met	Pro	Ser	Ser	Asp	Thr	Thr	Val	Thr	Phe	Lys	Ser	Glu	Val	
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gcc	gtc	ctc	tct	ccg	gaa	aag	gcc	gaa	aat	gac	gac	acc	tac	aaa	gac	2879
Ala	Val	Leu	Ser	Pro	Glu	Lys	Ala	Glu	Asn	Asp	Asp	Thr	Tyr	Lys	Asp	
	945					950					955					
gac	gtc	aat	cat	aat	caa	aag	tgc	aaa	gaa	aag	atg	gaa	gct	gaa	gag	2927
Asp	Val	Asn	His	Asn	Gln	Lys	Cys	Lys	Glu	Lys	Met	Glu	Ala	Glu	Glu	
960				965						970				975		
gag	gag	gct	tta	gcg	atc	gcc	atg	gcg	atg	tca	gcg	tct	cag	gat	gcc	2975
Glu	Glu	Ala	Leu	Ala	Ile	Ala	Met	Ala	Met	Ser	Ala	Ser	Gln	Asp	Ala	
				980				985						990		
ctc	ccc	atc	gtc	cct	cag	ctg	cag	gtg	gaa	aat	gga	gaa	gat	att	atc	3023
Leu	Pro	Ile	Val	Pro	Gln	Leu	Gln	Val	Glu	Asn	Gly	Glu	Asp	Ile	Ile	
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Ile	Ile	Gln	Gln	Asp	Thr	Pro	Glu	Thr	Leu	Pro	Gly	His	Thr	Lys	Ala	
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aaa	cag	cct	tac	aga	gaa	gac	gct	gag	tgg	ctg	aaa	ggc	cag	cag	ata	3119
Lys	Gln	Pro	Tyr	Arg	Glu	Asp	Ala	Glu	Trp	Leu	Lys	Gly	Gln	Gln	Ile	
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ggc	ctc	gga	gca	ttt	tct	tct	tgt	tat	cag	gct	caa	gat	gtg	gga	act	3167
Gly	Leu	Gly	Ala	Phe	Ser	Ser	Cys	Tyr	Gln	Ala	Gln	Asp	Val	Gly	Thr	

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Gly Thr Leu Met Ala Val Lys Gln Val Thr Tyr Val Arg Asn Thr Ser				
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tct gag caa gaa gaa gta gta gaa gca cta aga gaa gag ata aga atg				3263
Ser Glu Gln Glu Glu Val Val Glu Ala Leu Arg Glu Glu Ile Arg Met				
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atg agc cat ctg aat cat cca aac atc att agg atg ttg gga gcc acg				3311
Met Ser His Leu Asn His Pro Asn Ile Ile Arg Met Leu Gly Ala Thr				
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tgt gag aag agc aat tac aat ctc ttc att gaa tgg atg gca ggg gga				3359
Cys Glu Lys Ser Asn Tyr Asn Leu Phe Ile Glu Trp Met Ala Gly Gly				
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tcg gtg gct cat ttg ctg agt aaa tat gga gcc ttc aaa gaa tca gta				3407
Ser Val Ala His Leu Leu Ser Lys Tyr Gly Ala Phe Lys Glu Ser Val				
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gtt att aac tac act gaa cag tta ctc cgt ggc ctt tcg tat ctc cat				3455
Val Ile Asn Tyr Thr Glu Gln Leu Leu Arg Gly Leu Ser Tyr Leu His				
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Glu Asn Gln Ile Ile His Arg Asp Val Lys Gly Ala Asn Leu Leu Ile				
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Asp Ser Thr Gly Gln Arg Leu Arg Ile Ala Asp Phe Gly Ala Ala Ala				
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Arg Leu Ala Ser Lys Gly Thr Gly Ala Gly Glu Phe Gln Gly Gln Leu				
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ctg ggg aca att gca ttc atg gcg cct gag gtc cta aga ggt cag cag				3647
Leu Gly Thr Ile Ala Phe Met Ala Pro Glu Val Leu Arg Gly Gln Gln				
1200		1205	1210	1215
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Tyr Gly Arg Ser Cys Asp Val Trp Ser Val Gly Cys Ala Ile Ile Glu				
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atg gct tgt gca aaa cca cct tgg aat gca gaa aaa cac tcc aat cat				3743
Met Ala Cys Ala Lys Pro Pro Trp Asn Ala Glu Lys His Ser Asn His				
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Leu Ala Leu Ile Phe Lys Ile Ala Ser Ala Thr Thr Ala Pro Ser Ile				
1250		1255	1260	
ccg tca cac ctg tcc cct ggt tta cga gat gtg gct ctt cgt tgt tta				3839
Pro Ser His Leu Ser Pro Gly Leu Arg Asp Val Ala Leu Arg Cys Leu				
1265		1270	1275	
gaa ctt cag cct cag gac cgg cct ccg tca aga gag ctg ctg aaa cat				3887
Glu Leu Gln Pro Gln Asp Arg Pro Pro Ser Arg Glu Leu Leu Lys His				
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Pro Val Phe Arg Thr Thr Trp  
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3911

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35 40 45  
Ala Ser Lys Gly Arg Arg Ser Pro Ser Pro Gly Asn Ser Pro Ser Gly  
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Arg Thr Val Lys Ser Glu Ser Pro Gly Val Arg Arg Lys Arg Val Ser  
65 70 75 80  
Pro Val Pro Phe Gln Ser Gly Arg Ile Thr Pro Pro Arg Arg Ala Pro  
85 90 95  
Ser Pro Asp Gly Phe Ser Pro Tyr Ser Pro Glu Glu Thr Asn Arg Arg  
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Val Asn Lys Val Met Arg Ala Arg Leu Tyr Leu Leu Gln Gln Ile Gly  
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Pro Asn Ser Phe Leu Ile Gly Gly Asp Ser Pro Asp Asn Lys Tyr Arg  
130 135 140  
Val Phe Ile Gly Pro Gln Asn Cys Ser Cys Ala Arg Gly Thr Phe Cys  
145 150 155 160  
Ile His Leu Leu Phe Val Met Leu Arg Val Phe Gln Leu Glu Pro Ser  
165 170 175  
Asp Pro Met Leu Trp Arg Lys Thr Leu Lys Asn Phe Glu Val Glu Ser  
180 185 190  
Leu Phe Gln Lys Tyr His Ser Arg Arg Ser Ser Arg Ile Lys Ala Pro  
195 200 205  
Ser Arg Asn Thr Ile Gln Lys Phe Val Ser Arg Met Ser Asn Ser His  
210 215 220  
Thr Leu Ser Ser Ser Ser Thr Ser Thr Ser Ser Ser Val Asn Ser Ile  
225 230 235 240  
Lys Asp Glu Glu Glu Gln Met Cys Pro Ile Cys Leu Leu Gly Met Leu  
245 250 255  
Asp Glu Glu Ser Leu Thr Val Cys Glu Asp Gly Cys Arg Asn Lys Leu

260										265					270				
His	His	His	Cys	Met	Ser	Ile	Trp	Ala	Glu	Glu	Cys	Arg	Arg	Asn	Arg				
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Phe	Tyr	Ser	His	Glu	Leu	Ser	Ser	Pro	Val	Asp	Ser	Pro	Ser	Ser	Leu				
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Arg	Ala	Ala	Gln	Gln	Gln	Thr	Val	Gln	Gln	Gln	Pro	Leu	Ala	Gly	Ser				
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Arg	Arg	Asn	Gln	Glu	Ser	Asn	Phe	Asn	Leu	Thr	His	Tyr	Gly	Thr	Gln				
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Gln	Ile	Pro	Pro	Ala	Tyr	Lys	Asp	Leu	Ala	Glu	Pro	Trp	Ile	Gln	Val				
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Cys	Ile	Leu	Gly	Asn	Gln	Ala	Glu	Ser	Asn	Asn	Trp	Gln	Glu	Leu	Leu				
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Phe	Tyr	Pro	His	Ile	Val	Ser	Thr	Asp	Val	Ser	Gln	Ala	Glu	Pro	Val				
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Glu Ile Arg Tyr Lys Lys Leu Leu Ser Leu Leu Thr Phe Ala Leu Gln  
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 Ser Ile Asp Asn Ser His Ser Met Val Gly Lys Leu Ser Arg Arg Ile  
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 Tyr Leu Ser Ser Ala Arg Met Val Thr Ala Val Pro Ala Val Phe Ser  
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 Gln Thr Lys Gly Arg Pro His Ser Gln Cys Leu Asn Ser Ser Pro Leu  
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 Pro Ser Asp Glu Thr Val Phe Thr Pro Val Glu Asp Lys Cys Arg Leu  
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 Val Arg Ser Val Glu Leu Asp Gln Leu Pro Glu Gln Pro Leu Phe Leu  
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 Thr Ala Ser Pro Pro Cys Pro Ser Thr Ser Pro Ser Pro Glu Pro Ala  
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 Asp Ala Ala Ala Gly Ala Ser Gly Phe Gln Pro Ala Ala Gly Pro Pro  
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 Pro Pro Gly Ala Ala Ser Arg Cys Gly Ser His Ser Ala Glu Leu Ala  
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 Ser Ala Ala Ala Pro Ser Gly Arg Glu Met Glu Asn Lys Glu Thr Leu  
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Lys Gly Leu His Lys Met Asp Asp Arg Pro Glu Glu Arg Met Ile Arg  
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 Glu Lys Leu Lys Ala Thr Cys Met Pro Ala Trp Lys His Glu Trp Leu  
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 Glu Arg Arg Asn Arg Arg Gly Pro Val Val Val Lys Pro Ile Pro Ile  
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 Lys Gly Asp Gly Ser Glu Met Ser Asn Leu Ala Ala Glu Leu Gln Gly  
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 Glu Gly Gln Ala Gly Ser Ala Ala Pro Ala Pro Lys Gly Arg Arg Ser  
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 Pro Gly Val Arg Arg Lys Arg Val Ser Pro Val Pro Phe Gln Ser Gly  
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 Arg Ile Thr Pro Pro Arg Arg Ala Pro Ser Pro Asp Gly Phe Ser Pro  
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 Tyr Ser Pro Glu Glu Thr Ser Arg Arg Val Asn Lys Val Met Arg Ala  
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 Gly Asp Ser Pro Asp Asn Lys Tyr Arg Val Phe Ile Gly Pro Gln Asn  
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 Thr Leu Lys Asn Phe Glu Val Glu Ser Leu Phe Gln Lys Tyr His Ser  
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 Arg Arg Ser Ser Arg Ile Lys Ala Pro Ser Arg Asn Thr Ile Gln Lys  
 385 390 395 400  
 Phe Val Ser Arg Met Ser Asn Cys His Thr Leu Ser Ser Ser Ser Thr  
 405 410 415  
 Ser Thr Ser Ser Ser Glu Asn Ser Ile Lys Asp Glu Glu Glu Gln Met  
 420 425 430  
 Cys Pro Ile Cys Leu Leu Gly Met Leu Asp Glu Glu Ser Leu Thr Val  
 435 440 445  
 Cys Glu Asp Gly Cys Arg Asn Lys Leu His His His Cys Met Ser Ile  
 450 455 460  
 Trp Ala Glu Glu Cys Arg Arg Asn Arg Glu Pro Leu Ile Cys Pro Leu  
 465 470 475 480  
 Cys Arg Ser Lys Trp Arg Ser His Asp Phe Tyr Ser His Glu Leu Ser



Met Val Thr Thr Val Pro Pro Leu Phe Ser Lys Leu Val Thr Met Leu  
 820 825 830  
 Ser Ala Ser Gly Ser Ser His Phe Ala Arg Met Arg Arg Arg Leu Met  
 835 840 845  
 Ala Ile Ala Asp Glu Val Glu Ile Ala Glu Val Ile Gln Leu Gly Ser  
 850 855 860  
 Glu Asp Thr Leu Asp Gly Gln Gln Asp Ser Ser Gln Ala Leu Ala Pro  
 865 870 875 880  
 Pro Arg Tyr Pro Glu Ser Ser Ser Leu Glu His Thr Ala His Val Glu  
 885 890 895  
 Lys Thr Gly Lys Gly Leu Lys Ala Thr Arg Leu Ser Ala Ser Ser Glu  
 900 905 910  
 Asp Ile Ser Asp Arg Leu Ala Gly Val Ser Val Gly Leu Pro Ser Ser  
 915 920 925  
 Ala Thr Thr Glu Gln Pro Lys Pro Thr Val Gln Thr Lys Gly Arg Pro  
 930 935 940  
 His Ser Gln Cys Leu Asn Ser Ser Pro Leu Ser Pro Pro Gln Leu Met  
 945 950 955 960  
 Phe Pro Ala Ile Ser Ala Pro Cys Ser Ser Ala Pro Ser Val Pro Ala  
 965 970 975  
 Gly Ser Val Thr Asp Ala Ser Lys His Arg Pro Arg Ala Phe Val Pro  
 980 985 990  
 Cys Lys Ile Pro Ser Ala Ser Pro Gln Thr Gln Arg Lys Phe Ser Leu  
 995 1000 1005  
 Gln Phe Gln Arg Thr Cys Ser Glu Asn Arg Asp Ser Glu Lys Leu Ser  
 1010 1015 1020  
 Pro Val Phe Thr Gln Ser Arg Pro Pro Pro Ser Ser Asn Ile His Arg  
 1025 1030 1035 1040  
 Ala Lys Ala Ser Arg Pro Val Pro Gly Ser Thr Ser Lys Leu Gly Asp  
 1045 1050 1055  
 Ala Ser Lys Asn Ser Met Thr Leu Asp Leu Asn Ser Ala Ser Gln Cys  
 1060 1065 1070  
 Asp Asp Ser Phe Gly Ser Gly Ser Asn Ser Gly Ser Ala Val Ile Pro  
 1075 1080 1085  
 Ser Glu Glu Thr Ala Phe Thr Pro Ala Glu Asp Lys Cys Arg Leu Asp  
 1090 1095 1100  
 Val Asn Pro Glu Leu Asn Ser Ser Ile Glu Asp Leu Leu Glu Ala Ser  
 1105 1110 1115 1120  
 Met Pro Ser Ser Asp Thr Thr Val Thr Phe Lys Ser Glu Val Ala Val  
 1125 1130 1135

Leu Ser Pro Glu Lys Ala Glu Ser Asp Asp Thr Tyr Lys Asp Asp Val  
 1140 1145 1150  
 Asn His Asn Gln Lys Cys Lys Glu Lys Met Glu Ala Glu Glu Glu  
 1155 1160 1165  
 Ala Leu Ala Ile Ala Met Ala Met Ser Ala Ser Gln Asp Ala Leu Pro  
 1170 1175 1180  
 Ile Val Pro Gln Leu Gln Val Glu Asn Gly Glu Asp Ile Ile Ile Ile  
 1185 1190 1195 1200  
 Gln Ala Asp Thr Pro Glu Thr Leu Pro Gly His Thr Lys Ala Asn Glu  
 1205 1210 1215  
 Pro Tyr Arg Glu Asp Thr Glu Trp Leu Lys Gly Gln Gln Ile Gly Leu  
 1220 1225 1230  
 Gly Ala Phe Ser Ser Cys Tyr Gln Ala Gln Asp Val Gly Thr Gly Thr  
 1235 1240 1245  
 Leu Met Ala Val Lys Gln Val Thr Tyr Val Arg Asn Thr Ser Ser Glu  
 1250 1255 1260  
 Gln Glu Glu Val Val Glu Ala Leu Arg Glu Glu Ile Arg Met Met Ser  
 1265 1270 1275 1280  
 His Leu Asn His Pro Asn Ile Ile Arg Met Leu Gly Ala Thr Cys Glu  
 1285 1290 1295  
 Lys Ser Asn Tyr Asn Leu Phe Ile Glu Trp Met Ala Gly Ala Ser Val  
 1300 1305 1310  
 Ala His Leu Leu Ser Lys Tyr Gly Ala Phe Lys Glu Ser Val Val Ile  
 1315 1320 1325  
 Asn Tyr Thr Glu Gln Leu Leu Arg Gly Leu Ser Tyr Leu His Glu Asn  
 1330 1335 1340  
 Gln Ile Ile His Arg Asp Val Lys Gly Ala Asn Leu Leu Ile Asp Ser  
 1345 1350 1355 1360  
 Thr Gly Gln Arg Leu Arg Ile Ala Asp Phe Gly Ala Ala Ala Arg Leu  
 1365 1370 1375  
 Ala Ser Lys Gly Thr Gly Ala Gly Glu Phe Gln Gly Gln Leu Leu Gly  
 1380 1385 1390  
 Thr Ile Ala Phe Met Ala Pro Glu Val Leu Arg Gly Gln Gln Tyr Gly  
 1395 1400 1405  
 Arg Ser Cys Asp Val Trp Ser Val Gly Cys Ala Ile Ile Glu Met Ala  
 1410 1415 1420  
 Cys Ala Lys Pro Pro Trp Asn Ala Glu Lys His Ser Asn His Leu Ala  
 1425 1430 1435 1440  
 Leu Ile Phe Lys Ile Ala Ser Ala Thr Thr Ala Pro Ser Ile Pro Ser  
 1445 1450 1455  
 His Leu Ser Pro Gly Leu Arg Asp Val Ala Leu Arg Cys Leu Glu Leu

146C

1465

1470

Gln Pro Gln Asp Arg Pro Pro Ser Arg Glu Leu Leu Lys His Pro Val  
1475 1480 1485

Phe Arg Thr Thr Trp  
1490